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PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Gripping Appliance for Picking up Articles

I, ALBERT GEORGE CROSSLAND, a British Subject, of Price Street, Birmingham, 4, do hereby declare the nature of this invention to be as follows:—

The invention provides the hereinafter described gripping appliance for picking up articles, particularly small articles from difficult positions.

10 The appliance comprises an outer-sheath in the form of a length of closely coiled resilient wire spring, parallel except for one end which tapers to a larger diameter; an inner and shorter 15 parallel length of closely coiled spring wire of smaller diameter to loosely fit and slide within the outer-sheath and to the one end of which is secured the one ends of three or more spring arms or jaws 20 adapted to be closed to each other within the tapering end of the outer-sheath by tension created in said inner length; an operating plunger-like rod screwing into the inner end of the inner length and 25 extending through the inner end of the outer length and becoming a part of the inner length for hand-operation; and a mounting member in the form of a rigid yolk-like plate to which the inner end of 30 the outer-sheath and the inner end of the inner length are immovably connected so that this yolk-like plate can be gripped by hand while the inner length is hand-operated from the plunger-rod, the 35 inner length being normally in tension within the outer-sheath between the tapering end of the outer-sheath and the anchoring yolk, so that normally the spring-grips are closed and within the 40 tapering end, and the plunger has to be operated to project them so that they can automatically open out to embrace any reasonable size of article it is desired to

pick up from a difficult position.

Both outer-sheath and inner length are 45 resiliently flexible outwardly of the plunger-rod, so that the appliance can be used either straight, or bent, for the purpose for picking-up for which it is designed.

Such appliance is conveniently of about 18" in length over-all.

Normally the automatically opening gripping arms are closed by being pulled into the tapering end of the sheath by 55 the tension on the inner member. To open the jaws the anchoring yolk is held between fingers, and the plunger is hand-pressed inwardly to project the gripping arms so that they will automatically open 60 and can be placed around an article in a difficult position, when on relieving the plunger-pressure the article will be gripped and recovered from a difficult position.

65 The attachment of the ends of the spring-length to the yolk-like anchoring member is preferably by providing a segmental spiral opening in the centre of the member into which the two spring-lengths can be anchored by screwing in and by the application of a forced-in bush to the end of the inner spring-length, the plunger working through the bore of this bush, and screwing into the end of the 70 inner length for its connection to work with the inner member as one-piece.

75 The gripping arms can, in addition, be magnetized to pick up magnetically without claw-grip or with claw-grip.

80 Dated the 21st day of September, 1944.

For the Applicant,
GEORGE T. FUERY,
Chartered Patent Agent,
Newhall Chambers, Newhall Street,
Birmingham, 3.

COMPLETE SPECIFICATION

Gripping Appliance for Picking up Articles

I, ALBERT GEORGE CROSSLAND, a British Subject, of Price Street, Birmingham, 4, do hereby declare the

nature of this invention and in what manner the same is to be performed, to 85 be particularly described and ascertained

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in and by the following statement:—

This invention relates to a gripping appliance for picking up articles, especially small articles located in 5 difficult or unobtrusive positions.

There are many instances both 10 domestically and industrially where articles such as nuts, bolts, screws, pins and spanners are inaccessible for picking up directly by the hand. To quote a typical instance, is when carrying out 15 repairs or maintenance to a motor vehicle, it being well known that such articles as above referred to are inadvertently dropped and cannot be retrieved without the mechanic getting under the vehicle.

It is therefore the object of the present 20 invention to provide a gripping appliance for the purpose in view which is simple in construction, comprises a minimum 25 number of parts and which is capable of being produced economically.

Accordingly the invention consists of a 25 gripping appliance for picking up articles comprising a coiled spring sheath, a coiled spring inner member slidable in said sheath and having spring gripping jaws at one end and an operating member 30 at the other end, said sheath and inner member being capable of universal movement and so arranged that the gripping jaws are closed automatically and are 35 adapted to open automatically when the operating member is manually actuated.

The invention also consists of an 40 appliance as hereinbefore set forth wherein the outer end of the sheath, which forms an abutment for said jaws, 45 is flared or tapered while the inner end of said sheath has a mounting member secured thereto; the inner end of the coiled spring member is also secured to said mounting member and preferably in a state of slight tension.

In order that the invention may be 50 readily carried into effect one construction thereof will now be described in detail with reference to the accompanying drawing wherein:—

Fig. 1 is a sectional elevation of the 55 gripping appliance, the jaws being shown in open position.

Fig. 2 is a fragmentary view of Fig. 1 60 showing the jaws in the automatically closed position.

Fig. 3 shows one of the jaws in side view and elevation.

Fig. 4 and Fig. 5 are elevations of the 65 coiled spring sheath and the coiled spring inner member respectively.

Fig. 6 is an elevation of the operating member, and

Fig. 7 is a composite view showing the 70 mounting member in elevation and plan.

In the drawings, 1 is a coiled spring sheath and 2 a similar coiled spring inner member slidable in said sheath 1 in a plunger-like manner. The outer end of the sheath 1 is tapered or flared at 3—70 otherwise it is parallel. Secured to the outer end of said inner member 2 are three sheet metal spring jaws 4 which normally tend to assume an open state as shown in Fig. 1. The inner end 5 of the sheath 1 has a sheet metal mounting member or yoke 6 secured thereto by providing a segmental spiral opening 7 in said yoke into which a coil or coils of the sheath 1 are engaged and soldered. The inner end 8 of the member 2 is also secured or anchored to said yoke by means of a bush 9 which is forced into the end 8 and soldered to the yoke 6. This inner spring member 2 may be anchored at its inner 85 end slightly in a state of tension so that it tends to draw the spring jaws 4 into the tapered end 3, thus automatically closing the jaws. A manually operable plunger rod 12, bearing in the bush 9, is screwed 90 at 14 into the bore of the inner spring member 2, the bore being enlarged locally at 13 to admit of displacement of the rod freely therein and of the enlarged bore portion being extended in the bore 95 of the sheath 1 under control of the rod 12.

It will be appreciated, therefore, that due to its flexibility the composite coiled 100 spring 1, 2, can move universally between the anchorage or attachment end 14 of the rod 12 and the extreme outer end of the sheath 1.

When it is desired to pick up and recover an article in a difficult or 105 inaccessible position, the yoke 6 is held between fingers of the user's hand with the plunger rod 12 either lying in the palm or engaged by the thumb thereof, and the appliance is extended into the 110 required position when the springs 1, 2, will bend to meet the situation according to such obstructions as may be met. The user then depresses the plunger 12 which extends the inner spring member 2 115 between its anchorages 9, 14, and causes axial displacement of said inner member 2 in said sheath 1, whereupon the jaws 4 are projected from the outer end of said sheath 1 and open automatically so that 120 they can be placed or located round the article referred to. On relieving pressure on said plunger rod 12, the article will be gripped by the jaws as they are drawn automatically into the sheath under the 125 action of the spring 2.

Preferably the jaws 4 are magnetised to admit of recovery with or without the above described gripping action.

Having now particularly described and 130

ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

5 1. Gripping appliance for picking up articles, comprising a coiled spring sheath, a coiled spring inner member slidable in said sheath and having gripping jaws at one end and an operating member at the other end, said sheath and inner member being capable of universal movement and so arranged that the gripping jaws automatically close and can automatically open when the 10 operating member is manually actuated.

10 2. Gripping appliance according to Claim 1, wherein the spring member is in tension thereby to draw the gripping jaws towards the outer end of the sheath and cause them automatically to close.

15 3. Gripping appliance according to

Claim 1 or Claim 2 wherein the outer end of the sheath is flared or tapered into a socket.

4. Gripping appliance according to 25 Claim 3, wherein the inner end of the sheath has a mounting member secured thereto and the inner end of the coiled spring member is secured to the mounting member in a state of tension. 30

5. Gripping appliance for picking up small articles constructed, arranged, and adapted to operate substantially as hereinbefore described and as shown by the accompanying drawing. 35

Dated this 21st day of September, 1945.

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[This Drawing is a reproduction of the Original on a reduced scale.]

